GEOGRAPHIC SCHOOL BULLETINS

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VOLUME 37, NUMBER 27, APRIL 27, 1959 . . . *To Know This World, Its Life*

- Indonesia—3,000 Islands, One Republic
- Moscow Fairgoers View American Life
- Malta, Crossroads of the Mediterranean
- Effortless Albatross Soars the Sky
- Maps Put the World in Your Hands

BELLES OF BALI, wearing traditional tight wrappings and sunburst crowns, wait to perform the *djanger* dance. Once the bebop of Bali, the djanger is now a dignified dance that often tells a classical Indonesian legend. Balinese dancers make up with powder, lipstick, and grease paint, even paint on new hairlines and reshape their eyebrows with razors.

W. ROBERT MOORE
NATIONAL GEOGRAPHIC STAFF

UMI

NGS MAP

World's Largest Archipelago

- Stretches wide as the U.S.A.
- Double the land area of Texas
- Population nearly half that of U.S.
- Java alone equals England in size, far surpasses it in population
- 3,000 islands and islets in all
- Total population 85,500,000
- Total land area 575,900 sq. mi.

American teen-ager's pocket money—averaging between 50 and 100 dollars.

The 3,000 islands strung along the Equator between Australia and the mainland of Asia (see map above) form a lush garden. The land is so fertile that joking Indonesian farmers warn each other not to lean on their walking sticks too long—the sticks might take root and sprout leaves. The warm climate allows two or three harvests a year. Rice, staple of the Indonesian diet, plus coffee, rubber trees, corn, cassava, sweet potatoes, and coconuts are the crops.

But Indonesians have yet to use their land to its full advantage. Modern farming methods came late. Only in recent years have farmers learned the use of such basic aids as improved seed, insecticides, and fertilizers.

In many areas, tractors would be of little use. The plots are too small for machinery. Two-thirds of Indonesia's 85,500,000 people are crowded on the island of Java, making this island one of the most thickly populated areas on earth, with more than 1,000 persons per square mile. The average Java farm is two acres.

Wherever you go in Indonesia, you will see rice in some stage of cultivation. At right, a rice crop is ready to be threshed at a Bali granary. Yet the country is forced to import thousands of tons a year to feed itself.

W. ROBERT MOORE, NATIONAL GEOGRAPHIC STAFF

Slowly but surely the face of Indonesia is changing. A factory in Medan turns out T-shirts on modern machinery. But in the Surakarta region of Java, men and women still sit around wood fires to dye and print the *kain*, worn as sarongs by most Indonesians. The process has changed little during hundreds of years.

Thatched huts still dominate rural landscapes, but modern housing projects dot the larger cities.

New roads have been built since the war, and more are planned. Crews move into thick jungle to tap the islands' wealth of petroleum. Already one of Indonesia's leading industries, oil offers

UMI

NATIONAL GEOGRAPHIC PHOTOGRAPHER J. BAYLOR ROBERTS

Indonesia ... Islands Turn Promise into Progress

JAVANESE RICE FARMERS slog through their mucky paddies behind carabao-drawn plows. Traditionally-costumed Balinese dancers await their cue to tell an age-old story in dance (cover). In a remote corner of Sumatra an old woman lives in her stilted, black-thatched house, the way her tribe lived 300 years ago.

But she proudly shows photographs of her children wearing Western dress and driving a shiny new convertible. Late model American cars honk through traffic jams on the Downtown Plaza of Djakarta. A Dutch instructor on Sumatra teaches young native men the most efficient way to suck oil from the earth.

These are sights of Indonesia, nation in transition. For these scattered islands, new-welded into a Republic, the road from subjection to true independence is long and tortuous.

For over 300 years Indonesia, formerly the Netherlands East Indies, lived under foreign rule. In 1619, Dutch traders founded a town where the city of Djakarta, Indonesia's capital, now stands. They went on to conquer the rest of the East Indies. As overlords, they built profitable oil and rubber industries and a sizable trade.

During World War II, Japanese occupied the islands. Indonesians were little more than slaves. Their Dutch masters sat out the war in concentration camps. Industry faltered hopelessly. At war's end, the Indonesians, their country plundered, doubled their problems by opening their own war for independence from the Dutch. After a long struggle, the Republic of Indonesia was proclaimed in August, 1950.

Not yet nine years old, the country is beset with all the political upheavals inevitable in a young republic. In addition, industry has yet to recover completely from World War II. Many production levels hover under prewar output. Potentially rich and powerful, Indonesia is now quite poor. Annual per capita income falls short of an

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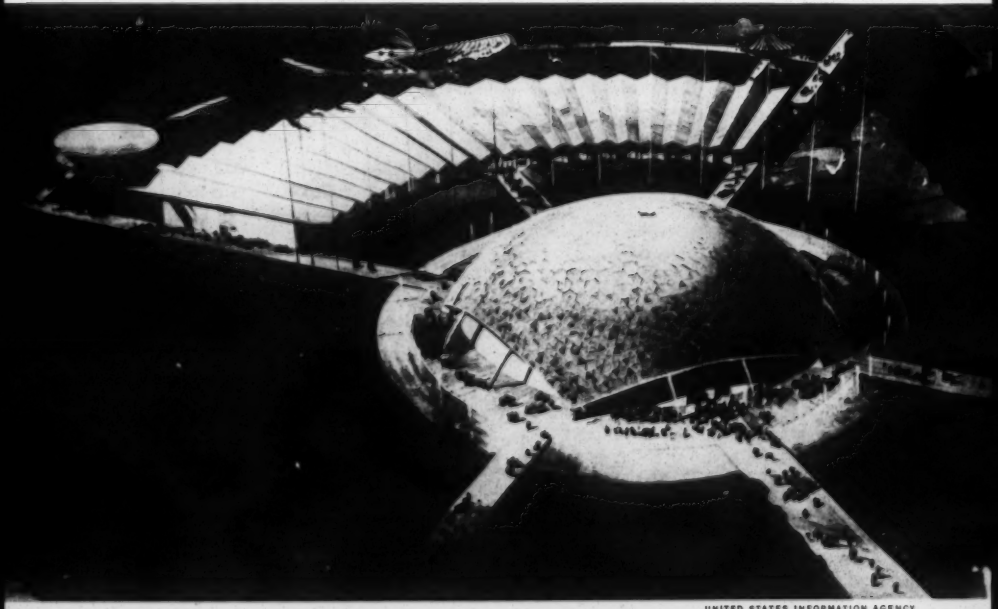
FOR MOSCOW, A LOOK AT AMERICA

IN MOSCOW THIS SUMMER the American National Exhibition (below) will allow Ivan and his sturdy wife to examine the "splitnik"—a typical ranch-style home split by a 10-foot walkway through the center—and hundreds of other exhibits displaying the American way. They will be among millions of Russians and Americans participating in a major cultural exchange between countries whose governments are more accustomed to growling at each other.

At the same time, United States citizens will see displays of the U.S.S.R.'s technical, scientific, and cultural achievements at the New York Coliseum.

Three-and-a-half million Russians are expected to crowd the exhibit halls beneath the gold-tinted aluminum dome where an electronic "brain" can answer almost any question about America. Russians will be shown the abundance and variety of America—supermarkets, churches, dams, and highways. Among scientific features, they will see a section of the National Geographic Society-Palomar Observatory Sky Survey, a photographic map of the heavens bigger than a tennis court. (See *Geographic School Bulletins,* October 31, 1955.)



UNITED STATES INFORMATION AGENCY

Soviet visitors will get a good look at everyday products of United States industry, exhibitions of art and architecture, and the *Family of Man* photographic display. Current newspapers, magazines, and books will honor the uncensored press.

The eight-and-a-half acre site will include the Brussel's Fair hit, Circarama—with movies of the American scene projected to surround the audience. Outdoor exhibits will include automobiles, boats moored in plastic pools, color TV, and, for the junior Soviet citizen, a playground with a cowboy ghost town.

But "splitnik" is expected to be the star of the show, especially for Ivan's wife, who will undoubtedly compare its three bedrooms, large kitchen, and laundry facilities with her own drab, cramped apartment.

F. W. R.

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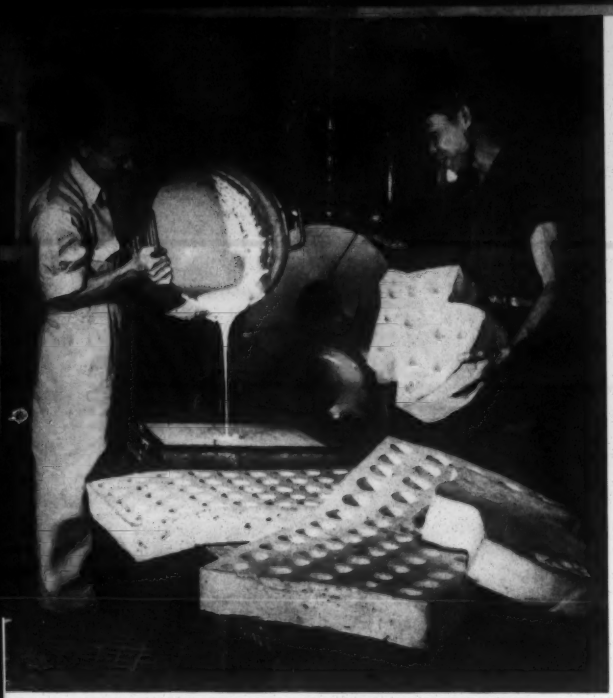


PHOTOGRAPHS BY NATIONAL GEOGRAPHIC PHOTOGRAPHER J. BAYLOR ROBERTS

additional reserves in many places. There are encouraging signs that useful minerals are buried in Indonesian soil.

The Indonesian Rubber Research Institute searches for new uses and improved quality for natural rubber. Synthetic rubber is a threat to this basic commodity.

Progress is slowed to a walk by the lack of trained personnel. If the country is to maintain its place as the world's largest producer of natural rubber, technicians are needed. Also in short supply are doctors, lawyers, plumbers, electricians, agronomists, engineers, teachers.

The answer to this urgent need is education. Schools have sprung up throughout the islands. Below, children on Borneo learn their lessons with pencil and slate. Textbooks, teachers, and laboratory equipment are in short supply, but they are increasing. Where construction has not kept pace with enthusiasm for learning, classes are held in thatched huts.

One educational problem is language. A new one for the whole country was created from parts of 40 tongues spoken by the islanders.

By 1961 the government hopes to eliminate illiteracy, which ran as high as 93 per cent before World War II.

So in some ways the struggle for independence has only begun. But long strides have been made, and Indonesia steps further each day. L.B.

SEE ALSO: National Geographic Map—Southeast Asia (paper, $1). *Magazine*—September 1955, "This Young Giant, Indonesia" ($1, includes Southeast Asia map); January 1951, "Republican Indonesia Tries Its Wings" ($1).

RUBBER RESEARCHERS, above, pour latex into molds to make foam-rubber cushions. The rubber industry is Indonesia's chief money-maker. It grew from 18 wild rubber seeds brought from the Amazon forest in 1876 by an English plant explorer. Today's production level: 735,000 tons a year.

MORE TRAINED MEN for rubber and other industries will come from the growing schools, below.

The Knights of Malta, whose victory over the Saracens in the 16th century painted one of the most glorious periods of Maltese history, left many marks of their occupation.

Throughout the island their forts and watchtowers, bastions and aqueducts spot a rocky, almost treeless landscape. Descendants of these knights still live in the original palaces.

Even prehistory left its signature on Malta. The cave of Ghar Dalam contains the fossil bones of elephants and extinct hippos that once bathed in the series of lakes which is now the Mediterranean Sea.

Scientists have found possible traces of Neanderthal man, and uncovered the ruins of a series of temples built entirely with stone tools.

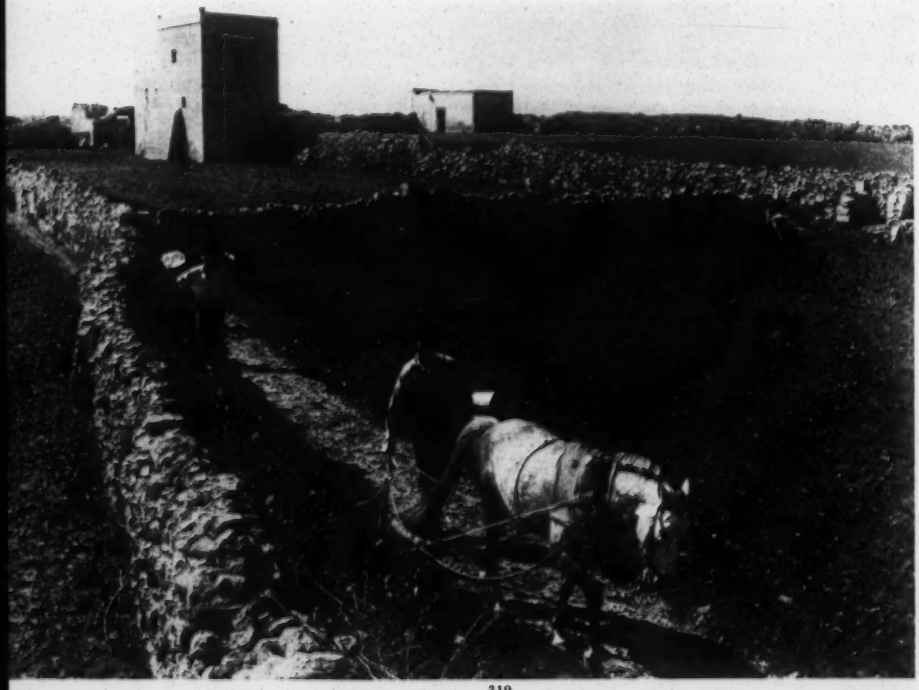
Cart tracks that wander to the edges of cliffs line Malta's surface. The vehicles of prehistoric men made them. But they are the same size as those cut today by the two-wheeled carts rattling along the island's stony streets behind ponies or donkeys.

There is disagreement on the origin of the Maltese woman's huge traditional headdress. Some say the women designed it as protection against Napoleon's overly gallant soldiers who occupied the island at the end of the 18th century. Others say the headdress was worn much earlier.

Called a *faldetta* or *ghonnella,* it is a voluminous black or blue silk hood stiffened with cardboard. It arches far enough out from the head to enable the wearer to carry small bundles inside. The younger generation abandons it, but one can still see older women coming from Mass, their faces darkened under the shadows of their cherished headgear.

Oddly enough, the problems of tiny Malta in the Mediterranean are quite similar to those of huge Indonesia in the Pacific (see page 314).

The principal industry of the island is farming, carried on much the same way it has been for centuries. In a plot too small for modern machinery, the Maltese farmer, below, plods behind his old-fashioned plow. The stone walls pro-



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STREET SCENE, VALLETTA: Narrow lanes in Malta's capital city hark back to its 16th century origins. Although German bombs left much of the city in ruins following World War II, reminders of its past still mark its face. Tens of thousands of oriental-style balconies project from homes. Statues of patron saints stand on corner shelves. Iron gates front many doorways—put up to keep once-numerous goats from entering the houses.

Planned as an impregnable bastion against attacking Turks, Valletta stands atop a rocky promontory, surrounded by fortified harbors. Every street slopes down to the waterfront, where ships of the world lie at anchor. Because of the deep, sheltered harbor, Britain held on to Malta after freeing it from Napoleon.

PHOTOGRAPHS BY EMIL BRUNNER

Trade Routes Cross at Malta

THE PILOT OF A supersonic jet patrolling the Mediterranean Sea could easily zoom over the Maltese Islands without spotting them.

Malta, Gozo, and Comino total less than 125 square miles. Malta, the largest, is but 17 miles long and nine miles broad at its widest point. The islands are dry spots left from an ancient land bridge which once spanned the Mediterranean from Europe to Africa.

Their importance is out of all proportion to their size. Spacious harbors and strategic location have made them maritime treasures. Jutting from the sea 180 miles from Africa and 150 miles from Europe, Malta guards the bustling trade routes between Gibraltar and Suez.

Many people, from prehistoric man to shipwrecked Christian refugees and foreign conquerors, have added strokes to the Maltese portrait.

The Phoenicians, who occupied Malta from about 1100 to 550 B.C., left the basis of the Maltese language. Although the islands have been British since 1814, islanders have clung to this ancient Semitic tongue, the language of Dido and Hannibal.

The remains of Roman villas—relics of an occupation from 216 B.C. to the end of the 4th century A.D.—have been excavated on Malta.

In A.D. 62 St. Paul was shipwrecked off Malta and brought Christianity to the islands. Today Malta remains devoutly Roman Catholic, and religion continues to be the axis of the islanders' lives. Church domes and spires punctuate the skyline of every village.

Gliding Albatrosses Scour the Sea

SKIMMING THE OCEAN on effortless wings, the most efficient gliders in the world circle a ship's wake. They are albatrosses, handsome masters of the air but ridiculous "gooney birds" on land.

Long narrow wings and instinctive command of air currents rising from the waves enable them to perform prodigies of flight. From the sandy Pacific islands where they are born, they fan out over the world's oceans.

Their great flying powers and the habit of tailing ships (for the edible refuse thrown overboard) gave the wanderers a firm place in marine folklore. Each bird was believed the reincarnation of the soul of a drowned sailor, and anyone who harmed such a bird was sure to bring bad luck to the ship. Killing an albatross was the crime of the Ancient Mariner in Coleridge's ballad, who lamented:

> "And I had done a hellish thing
> And it would work 'em woe:
> For all averred I had killed the bird
> That made the breeze to blow. . . ."

The largest species, the wandering albatross, may have a wing span of 11 feet and 4 inches. (The F-104 fighter plane has wings only 7½ feet on either side.)

PAINTING BY MAJOR ALLAN BROOKS

The birds in the painting at left are the short-tailed albatross (above), and the black-footed albatross (below). The black-footed is famous for its clownlike antics on Pacific islands.

When they return to land to nest, the birds are as awkward as a moose on stilts. They fall all over their little-used feet.

As nesting season starts, boy and girl albatross face each other. They bow and mutter. They leap about and sing a little, then jump and shriek. Unbearably funny to human onlookers, this performance is pleasing to the birds. Their eggs hatch into ungainly, down-covered chicks that become, in time, tireless masters of the ocean winds.

Over the islands, however, planes hit them while landing or taking off. Ornithologists seek ways to discourage them from flying over runways. F. S.

UMI

PHOTOGRAPHS BY EMIL BRUNNER

MANHOLES LEADING to underground storage bins dot the plaza in front of the cathedral in Floriana, Malta. Island farms cannot produce enough wheat and barley, so imported grain is stored in these 16th century granaries. Below, a worker fills one. When finished, he will seal it with bricks.

tect the soil from erosion by the almost constant wind.

Every available nook and cranny of the island is cultivated, with potatoes and other vegetables the main crops. But the Maltese would starve if they depended solely on home-grown produce. The population of the islands totals 320,000, giving them a population density of more than 2,600 persons per square mile. Vast quantities of imports, especially grain, meet the demand for food.

Since World War II, when the island suffered devastation under daily German air attack, Malta has been transformed.

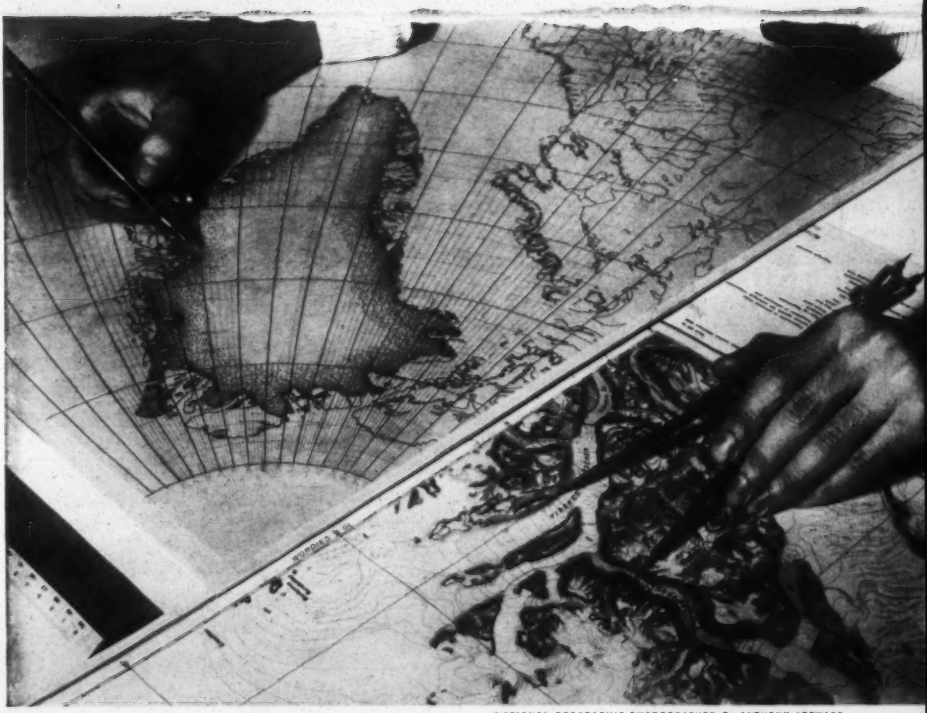
One of the most obvious alterations in its features is the absence of the once-large goat population. Live dairies, they were formerly driven to the housewife's door and milked to order. But the goats carried "Malta fever," and the government exchanged them for cows.

Two and three-tone American cars now roll over newly-constructed roads. Gradually the automobile replaces the horse cart and the horse-drawn taxi, although tourists still clamor for the picturesque "karrozzin."

New buildings have sprung up, including a power plant and hospital. Oil prospecting has begun. Dockyard improvements are transforming the harbor. New schools have been built.

Irrigation water flows from new dams. Agricultural education and training are reaching advanced levels.

The world-wide yen for freedom has spread to Malta. Those who demand independence, however, are outnumbered by those who want a tie to Britain. L. B.



NATIONAL GEOGRAPHIC PHOTOGRAPHER B. ANTHONY STEWART

can choose to have the areas of his map shown in proper proportion, or he can greatly exaggerate them. Often, he tries to compromise and have each part of his map as true as possible, without throwing other factors too far out of balance.

The means he uses to achieve these results are called projections. Although mathematically complicated, they are simply ways of allowing for the tears and wrinkles.

No single projection is the best for every kind of map. One that produces a good picture of Chile, which stretches north and south, would not accurately show the U. S. S. R., which spreads east and west.

To depict each portion of the world as truly as possible, National Geographic cartographers have used 13 different projections—including two they invented themselves—the Bumstead Polyconic Equal-Area and the Chamberlin Trimetric.

A full, illustrated description of mapping projections can be found in the Society's monograph, "The Round Earth on Flat Paper," $1 postpaid.

Under the direction of James M. Darley, Chief Cartographer, the Society's map department is now engaged in re-drawing maps of the entire world on standard-size sheets. These new charts, issued serially, can be mounted in a special Atlas Folio to enable the student or class to build its own reference work.

Before the world could be brought so easily into home and classroom, centuries of work were needed. The first map makers, it is believed, were prehistoric tribesmen, who scratched lines in sand or dust to show their fellows the location of game or water.

The earliest maps that we have today were made by the Babylonians as early as 2500 B. C. On clay tablets they drew the earth as they believed it was—a flat disk floating in a boundless ocean.

The idea of a spherical earth was not born until perhaps the close of the 5th century B. C., and it was not until the 3rd century that a Greek geographer computed the circumference of the earth by geometry.

In the 2nd century A. D., Ptolemy corrected previous work, and produced a summary of geographical information that remained unequaled even to the 16th century.

For about 14 centuries after Ptolemy, cartography remained virtually at a standstill.

UMI

Maps Put World In Your Hands

BRADFORD WASHBURN

PEERING INTO A MAPPING instrument, a National Geographic Society explorer in the jumbled ice and rock of the Yukon gathers information that will guide later travelers and mineral hunters, enable North Americans to see their continent clearly, and fire the imagination of stay-at-home voyagers.

He dictates the readings to an assistant, the first step in the long process of making a map.

Other experts will take this raw material and convert it into printing on a piece of paper—reproducing exactly, for those who can read it, the size, the heights, and depths of the glacial terrain.

Maps became necessary as soon as men started walking beyond the horizon. They are even more necessary today, and governments and private groups spend huge sums of money to try to make their maps more accurate.

Whether you are finding the way to a vacation beach or aiming a hydrogen-headed missile, you can't succeed without maps.

But maps can tell you more than the distance to a point and how to get there. Certain maps show you where animals or birds live. Others condense a history book into a single piece of paper. Maps can tell you the weather. On the right kind of maps, you can see not only the works of man, such as dams, canals, railroads, and highways, but even how men talk, think, and worship.

Politicians study maps that show how a district or the whole country voted. Religious leaders can scan others that show the religious preferences of different areas. Policemen can chart the crime patterns of their cities on maps in the station house. Language experts can see at a glance how far north the "southern" accent spreads.

In its simplest terms, a map is merely a picture of an area. It is, usually, much smaller than the area it shows, so that map makers have to translate information from the surveyors into the terms of their own map.

The picture below shows a National Geographic cartographer transferring information from a map made by Danish explorers in Greenland.

No matter how careful his work, the end result will be, in some sense, a lie. Since the earth is round, any map of it on a flat piece of paper must be distorted. It is as if you tried to flatten a tennis ball. To do so, you must either tear or wrinkle it.

The map maker has his choice of what kind of lie he wants to tell—how he will allow for the wrinkles. He can choose to have his map correct in regard to distances from a certain point. A bomber pilot would use such a map to find his target. The mapper

It revived in the Renaissance as men from Europe sailed to far corners of the globe.

A great stride forward was the Mercator projection of the 16th century. It made course plotting much simpler.

In the late 17th century, despite rapid progress, geographers were still confused over such basic matters as whether Japan was an island.

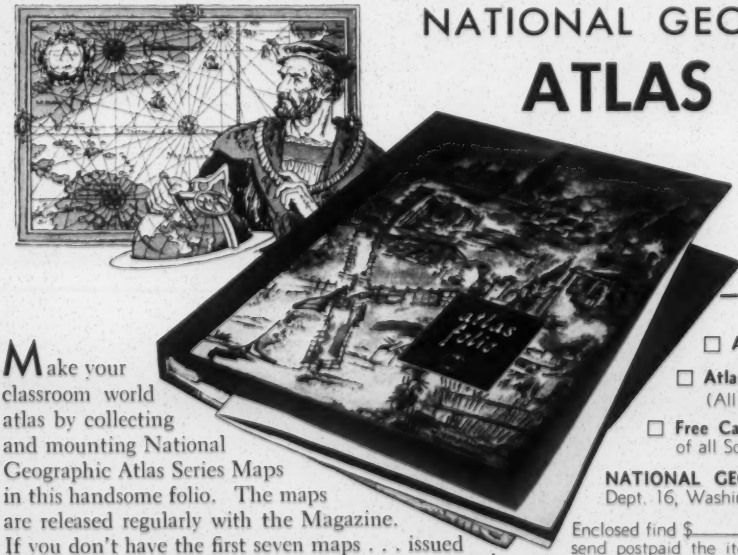
It remained for a Frenchman, Guillaume Delisle, to reform the system of geography that had remained in force since the 2nd century.

With data from actual surveys and astronomical observation, Delisle ruthlessly shifted land masses and moved islands. He published more than a hundred maps of various parts of the world, and his fame grew so great that Peter the Great of Russia came to call. He wanted to know the size of the country he ruled!

All the maps of Columbus's time would number but a tiny fraction of the 2,400,000 maps which the National Geographic Society sends its members with their monthly magazine. F. S.

NATIONAL GEOGRAPHIC PHOTOGRAPHER VOLKMAR WENTZEL

"HERE IT IS"—Dad uses his Atlas Folio to help with the homework. Its maps picture the world, teach geography, make clear the meaning of history or newspaper, and serve as an excellent foundation for dreams of travel and adventure.



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